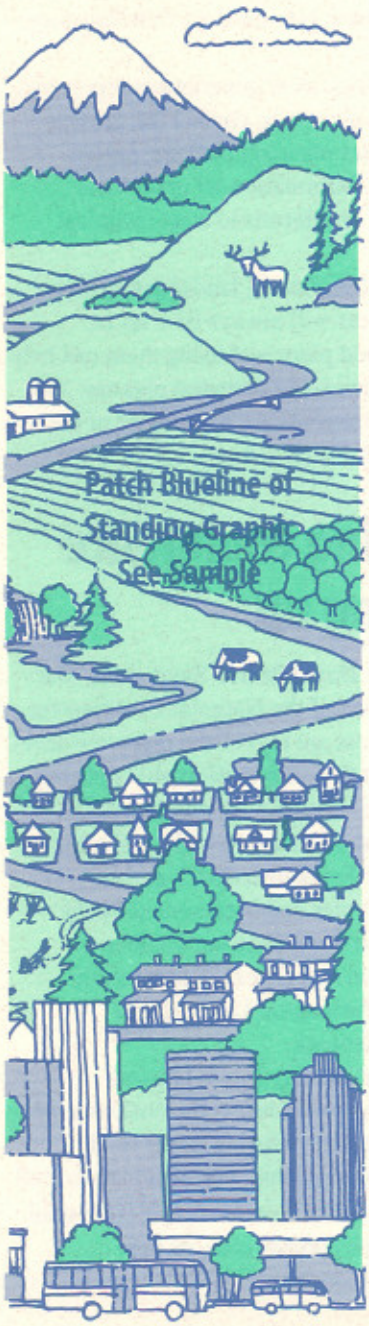
About Growth

A Quarterly Publication About Growth Management — Spring 2000

Washington State Community, Trade and Economic Development

Building Foundations for the Future



Floods: Plan ahead to avoid disaster

By Martin Best
Mitigation Officer, Emergency Management Division, Washington Military Department

Year after year, rainy season after rainy season, nations around the world continue to experience devastating floods that disrupt and destroy lives, crops, homes, and businesses. The recent flooding in Mozambique that left thousands homeless is just one example of the devastation that can be wrought by the force of floods.

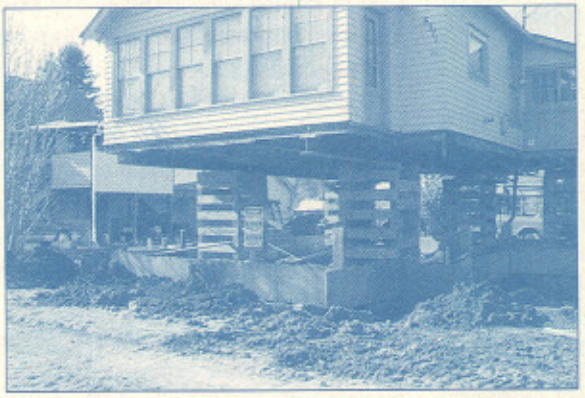
In our nation's recent history, floods in the Midwest caused billions of dollars in damages and disrupted lives for almost six months. Floods spawned by Hurricane Floyd destroyed 11,000 homes in North Carolina alone. In the state of Washington, we have had 10 presidential declarations of disaster for floods since 1980 with hundreds of millions of dollars in damage.

For the most part, much of this damage has resulted from one simple problem, development in the floodplains of our nation.

Many communities were established initially along the rivers and waterways of our state to be close to food and transportation sources. Now, with the tremendous population growth our state has experienced over the last several decades, development in the floodplain has placed more and more communities at risk.

We, as a society, have several options available to deal with the hazards of flooding. First, we can avoid the risk by not building in the floodplain. Second, we can separate the risk from the community by building large and expensive structural solutions like dikes, levees, and channelization. Third, we can build homes and structures better and higher to reduce the direct impacts of flooding. And, fourth, we can develop plans that will help us prepare for, mitigate against, and recover from floods.

> ***"None of this is pleasant to think about. Thinking and planning when the weather is beautiful is the best way to get ready for the dark days when monstrous pinwheels howl overhead."***
> – Wilmington Morning Star



This flood-damaged home in the city of Snoqualmie has been elevated to prevent further losses.
PHOTO / LORRI HERGERT, EMERGENCY MANAGEMENT DIVISION

One answer to the ongoing planning problem – development versus risk – is addressed in the guidebook *Optional Comprehensive Plan Element for Natural Hazard Reduction.* Washington State Community, Trade and Economic Development (CTED) developed this publication, with assistance from the state Emergency Management Division (EMD) and the Federal Emergency Management Agency (FEMA).

It is a well-known fact that those communities that have developed local plans to address flooding/disaster risk have managed to avoid, or greatly reduce, most of the damage caused by floods.

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Published quarterly by the Washington State Community, Trade and Economic Development, Growth Management Program, 906 Columbia St. SW, Olympia, WA 98504-8300. The program administers the state's Growth Management Act. Its role under the GMA is to assist and enable local governments to design their own programs to fit local needs and opportunities.

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Planning for the 2002 deadline

By Shane Hope
Managing Director, Growth Management Program

Volcanoes. Floods. Landslides. Erosion. Wildfires. When people and property are destroyed by them, we call the event a disaster. Yet, throughout earth's history, such natural forces have shaped and reshaped the land and water bodies around us.

With all our learning, we can build most new development so it is out of the way of natural hazards. Doing this requires solid information that can be used to guide local plans and regulations on where and how development should be located.

Under Washington's Growth Management Act, protection from natural hazards is required through locally adopted critical areas ordinances. Geologically hazardous areas, frequently flooded areas, and wetlands are included in the types of critical areas to be regulated.

Almost all counties and cities have some kind of critical areas ordinance in place. The level of protection varies from jurisdiction to jurisdiction.

By September 1, 2002, all counties and cities in Washington must review and, if needed, revise their critical areas policies and development regulations. This requirement offers the opportunity to avoid loss of life and property through good planning.

Assistance for this task is available from numerous sources. For example, several state agencies have expertise and can provide technical help, including maps of hazardous areas. (Also see the articles in this edition by Martin Best and Stephen P. Palmer.) Limited financial help is available in some cases.

As a community planner or interested citizen, you may want to know more about adding a chapter on natural hazard reduction to your existing comprehensive plan. A guidebook on this topic, *Optional Comprehensive Plan Element for Natural Hazard Reduction*, has been distributed to each Washington county and city. Additional copies are available, at no charge, by calling the state Growth Management Program at 360-753-2222. (Note: The guidebook was

developed with assistance from the Emergency Management Division of the Military Department and the Federal Emergency Management Agency.)

Up-to-date information also is available on the Internet. I recommend checking two federal government sites to get you started: www.websites.noaa.gov/guide/sciences/earth/earth.html *and* http://ltpwww.gsfc.nasa.gov/ndrd/disaster/links.

As always, local government representatives are welcome to contact the growth management planning staff for further assistance, information on good local examples, or referrals to state technical experts.

Volcanoes, floods, landslides, erosion, and wildfires will always be with us. Having good plans and using them can help communities avoid potential disaster. The 2002 requirements are a reminder of the urgency of this challenge.

Housing conference coming up

Futurist David Pearce Snyder and Mary Ann Gleason of the National Coalition for the Homeless are two of the many top-level speakers at this year's affordable housing conference, *Housing Washington 2000*. The seventh annual statewide conference takes place September 25-27 at the Spokane Center and is presented by the Washington State Housing Finance Commission and CTED in partnership with the Washington Low-Income Housing Network.

At this three-day event, housing stakeholders will address the challenge of helping meet the housing needs of all Washington residents. For information, call 1-800-767-HOME (extension 773), e-mail: conference@bombar.com, or visit www.wshfc.org/conf.

Landslide hazard mitigation and the GMA

By Stephen P. Palmer, Ph.D., Geologist
Geology and Earth Resource Division,
Washington Department of Natural Resources

In the last three years landslides in Washington have caused the deaths of five people and resulted in millions of dollars of damage. Two landslides, one in Thurston County and another in Cowlitz County, caused nearly $35 million dollars in residential property and infrastructure loss.

The Washington Growth Management Act (GMA) recognizes that geologic hazards pose a threat to the health and safety of citizens and identifies landslides in the definition of geologically hazardous areas [WAC 365-190-080 4(d)]. As with all other critical areas described in the GMA, actions for reducing or mitigating landslide hazards rest solely with the cities and counties. Effective risk reduction of geologic hazards involves:

- Proper identification and characterization of the hazard.
- Choice of an appropriate risk-reduction strategy from a wide range of potential strategies.
- Permanent integration of the chosen strategy into a regulatory framework.

The GMA identifies examples of areas that may be susceptible to landslides. Most local jurisdictions delineate landslide hazardous areas by simply assimilating some or all of these examples as the defining criteria. Generally, only qualified technical experts (engineering geologists and geotechnical engineers) can identify many of these criteria during a site-specific investigation. Few local jurisdictions have the financial resources to employ staff with expertise in landslide identification. Consequently, proper delineation (identification) of many landslide hazardous areas within a local jurisdiction may not be accomplished.

In Washington most landslide hazard ordinances call for submission of a geotechnical report (usually prepared by the applicant's hired consultant), if a proposed development action is identified to fall within a landslide hazardous area. Submission of these reports is the primary means for site-specific characterization and mitigation of the hazard and is the foundation of the landslide risk-reduction strategy. A weakness to this approach is that evidence of landslide potential in areas adjacent to the site may not be observed in the course of the investigation. Furthermore, local jurisdictions typically do not have the financial resources to hire staff or an independent consultant having sufficient expertise to adequately review these reports. Without adequate review, there is little opportunity for creating the dynamic interaction necessary for thorough evaluation of site characteristics and mitigative actions.

These two photos show a home on Fox Island destroyed by a landslide in the Spring of 1999.

Local governments that require geotechnical reports as a primary tool for reducing landslide hazard, but aren't able to adequately review these reports, cannot properly implement this risk-reduction strategy. The permanent integration of an improperly implemented strategy will not result in the desired goal.

The Washington Department of Natural Resources, Geology and Earth Resources Division has received funding from the Washington State Legislature to produce landslide hazard maps. It is the intent of the division to work with local communities to develop appropriate mitigative strategies and direct landslide mapping efforts in support of them. Clearly, the strategies and maps adopted in a highly urbanized area may be very different from those in a rural area facing the prospect of future growth.

The purpose of landslide hazard mitigation needs to focus on protecting the lives and property of Washington's citizens. These mitigation efforts will require the participation of technical experts, local governments, and citizens in order to develop effective regulations to prevent landslides.

PHOTOS COURTESY OF DEPARTMENT OF NATURAL RESOURCES

Flood hazard reduction and the ESA

By Cyrilla Cook
Program Manager, Rivers Section,
King County Department of Natural Resources

Has the recent listing of salmon under the Endangered Species Act (ESA) affected flood hazard mitigation activities in Washington?

You bet it has! And, in more ways than any of us imagined. It is affecting our floodplain mapping, scientific and technical studies, emergency flood response activities, and the design, schedule, and budget of our flood hazard reduction projects. Existing comprehensive flood mitigation plans prepared by local governments under RCW 86.12 may need to be updated, since most were written before the ESA. The plans may conflict with conservation and recovery efforts. The ESA listing may even affect the cost of flood insurance premiums in our communities.

Floodplain mapping, water quality, and other scientific studies may be affected by the ESA. A permit for any scientific study that could result in a "take" of the species is required by Section 10(1)(A). Activities, such as in-river surveys or snorkeling and water quality studies using a motorized vehicle, are potentially affected. The permitting of flood hazard reduction projects near salmon-bearing rivers and streams has become complicated and uncertain.

Under Section 7 of the ESA, all projects that have a federal "nexus" – a permit authorized by the U.S. Army Corps of Engineers, hazard mitigation grant, or Community Development Block Grant, for example – are subject to federal agency review and approval. A consultation may be required between the action agency (for permitting or funding) and the federal agency responsible under the ESA. In most cases, additional biological studies are being required to document effects of the project on the species, but in some instances design and construction techniques may need to be modified to mitigate impacts.

Under the ESA, federal agencies may issue regulations to provide for the conservation of the species. This rule, commonly referred to as a 4(d) rule, legally establishes the protective measures necessary for species conservation. The 4(d) rule for Puget Chinook Salmon currently is being negotiated by federal, state, local, and tribal governments and other stakeholders.

Once the 4(d) rule is issued, local governments will be required to comply with and implement its provisions. Under the current proposal, most flood hazard reduction projects would be subject to specific criteria and be required to be reviewed and permitted by local governments in accordance with these rules. If there's a federal nexus, these projects would also be subject to the federal Section 7 review process.

Many communities are taking a proactive approach to the ESA. Local governments in the Puget Sound area, in cooperation with state and tribal governments and other major stakeholders, have established a Tri-County partnership to identify early actions and develop long-term conservation strategies. These strategies – which include regional road maintenance, stormwater management, regulation of development, and habitat restoration and acquisition funding – have been submitted to federal agencies for review and approval under the 4(d) rule. This approach seeks a bottom-up approach, with local governments

This home was purchased by King County using federal and state hazard mitigation grant funds made available after the 1996 federal flood disaster declaration. Demolition of homes purchased with federal grant funds are now affected by ESA.

proposing regulations and programs, rather than a top-down approach, where activities would be mandated at the federal level.

One of the 4(d) proposals under study is the "management zone." Under this proposal, local governments would be required to regulate all development within 200 feet on either side of streams and rivers. This complex proposal would apply different regulations depending on whether the water body is located in urban or rural areas.

Delays in repairs to river protection facilities, such as this one which integrates rock, large logs, and willow cuttings, may occur due to ESA Section 7 requirements.

PHOTOS COURTESY OF KING COUNTY

For certain activities there would be "fixed regulations" to follow, with a fairly simple review process. For other projects, additional studies and review processes would be required.

The repair, maintenance, or renovation of lawfully established flood protection facilities – such as dikes, levees, or revetments – would be permitted, subject to standards now being developed. Projects involving new flood protection structures and permanent bank stabilization measures would require preparation of a habitat evaluation identifying the specific impacts of the project and habitat protection measures.

Based on the results of the evaluation, local governments may impose specific project conditions protective of salmon and related resources. Certain emergency flood protection measures would be permitted under the fixed regulations, as long as the formal criteria under the legal definition for an emergency are met. Acceptable emergency flood measures and appropriate post-emergency mitigation measures would be required and are still being developed.

How might ESA affect flood insurance premiums? For properties within a community to be eligible for flood insurance, the local government must participate in the National Flood Insurance Program (NFIP) and adopt minimum standards for floodplain management. The Community Rating System (CRS) Program under the NFIP provides incentives to communities that implement programs which exceed the NFIP standards; for example, a reduction in flood insurance premiums. Activities qualifying for CRS rating include floodplain mapping, floodplain regulations, open space zoning, flood warning, public education, stormwater management, and flood buyouts and elevations.

King County's CRS rating is currently six; residents now enjoy a 20 percent reduction in flood insurance premiums. As King County prepares for CRS recertification this year, our CRS rating is uncertain. Would current delays in implementing flood hazard reduction projects and technical studies reduce our score? Would the adoption of more stringent land use regulations along rivers and streams increase our score? Should communities get credit for carrying out floodplain management activities while also meeting ESA mandates? How can local governments protect public health and safety and comply with ESA mandates? Are comprehensive flood plans, which give first priority to public health and safety needs, in conflict with the ESA?

With the help of the Department of Ecology's Flood Control Account Assistance Program (FCAAP), King County has begun updating its 1993-adopted Flood Hazard Reduction Plan and hopes to address these issues. In addition to revising the plan based on lessons learned from the flood disasters of 1995-96, King County hopes to analyze the conflicting mandates of protecting public health and safety and conserving salmon. It is hoped the update will provide policy and program direction so flood hazard mitigation activities can occur in a timely, cost-effective manner while also conserving salmon.

Clark County takes action to prevent wildfire losses

By David Lynam
Clark County Fire Marshal

Despite being separated by the Columbia River, Clark County – located in the Southwest Washington – is considered "part" of the greater Portland, Oregon, metropolitan area. Two-thirds of the county's 627 square miles lie in the dramatic foothills of the Cascade Mountains. This area, part of the Yacolt Forest, is a mixture of mature, maturing, and mixed-forest cover, a descendent of ancient forests that once covered much of the West Coast.

The Yacolt, once sparsely populated primarily by those who made their living directly from the forest and forest products, is now home to urban commuters and small communities. Modern transportation systems have turned forest and rural living dreams into reality by creating short, easy commutes between The Yacolt and Portland's labor markets. By the early 1990s, the population of The Yacolt had increased faster than the average for the rest of the county – 26 percent verses 23 percent annually. The numbers of people calling The Yacolt home approached 40,000.

In 1902 a fire ravaged 238,000 of the 297,000-acre Yacolt Forest. Over the next 50 years, fire claimed The Yacolt nine more times – many areas repeatedly. In 1953 the Washington State Legislature identified The Yacolt as particularly hazardous and began appropriating funds for its restoration and protection. Continuing into the mid-1970s, water reservoirs, roads, and firebreaks were constructed. Snags were removed, and much of the land was reforested.

Although much has been done to mitigate the effects of fires occurring in The Yacolt, many of the conditions that create its beauty also render it dangerous. Forest cover, steep ravines, canyons, and small mountains dot and cross the area. High, prevailing winds from the Columbia Gorge or the Willamette Valley can rapidly dry the forest and fan flames. New hazards have been added. Homes intermixed throughout the forest and the careless acts of an increasing population create thousands of new ignition sources.

By the early 1990s, Clark County's fire services became concerned about the rapid settlement in the forest areas. The Yacolt was overdue for a major fire. The hazards of intermixed forest living became evident in 1991 when two disastrous fires occurred in other areas with geographic similarities to those in The Yacolt. Between October 16 and 22, fires in interface areas near Spokane, Washington, destroyed 114 homes and blackened 34,753 acres causing an estimated $18 million in direct property damage. Beginning on October 19, fire ravaged a hilly, interface area east of Oakland, California. The 1,500-acre fire claimed 25 lives, destroyed 3,354 homes, and caused an estimated loss of $1.5 billion.

Faced with the possibility of such a fire in Clark County, the Board of County Commissioners adopted Washington state's first comprehensive package of fire protection measures for urban interface areas. Relying on the lessons learned in Spokane and Oakland, the ordinance:

- Geographically identifies high fire-hazard, wildland-urban interface areas based on proven hazard criterion.
- Requires the creation of defensible spaces for new construction.
- Limits certain types of building construction.
- Requires fire resistive roof coverings.
- Includes additional road requirements designed to provide improved emergency access and to create additional fire breaks.
- Provides water supplies for fire fighting.
- Requires owners to maintain their property and buildings according to the provisions of the ordinance.

Clark County hopes these provisions, coupled with implementation of the county's comprehensive plan, will assure less dense, better-protected development where it occurs in our forest areas.

One of the most common natural risks in Washington state is wildfire. Adequate mitigation can help prevent the loss of homes, property, and life.

PHOTO COURTESY OF FIRE PROTECTION ASSOCIATION

County, cities join to develop wildfire rules

By Ken Williams
Benton County Fire Marshal

In the early 1990s, fire marshals for Kennewick, Richland, and Benton County met to discuss the problem of wildland-urban interface fires. The impetus for this discussion was the recent increase in large wildland fires in the area. As with any other type of fire, the major cause of wildland fires is some type of activity that involves people. Lands that once were only subjected to fires caused by an occasional lighting strike were being ignited, seemingly, on an annual basis. Compounding the fire problem was the increase in homes being built in the rural areas.

The meetings quickly focused on preventing a wildland fire from extending to homes, traveling from home to home, and getting fire trucks into the developments to protect people. To help reduce the chance of a wildland fire extending to a home, four new sections were added to the Uniform Building Code.

The first building code amendment was the elimination of wood roofs for all new construction and permitting the use of Class C shakes for repair of existing wood roofs. The reroofing was limited to 50 percent in a 12-month period.

A second amendment required single-family and multifamily residences with decks/porches less than three feet above grade to have non-combustible siding, if within 30 feet of adjacent undeveloped areas. Skirting is to be constructed so it doesn't allow the accumulation of combustible material under the deck or porch.

The remaining two items dealt with the height of the flame front and defensible space. With sagebrush as the most predominate fuel, this wasn't the problem of the wooded wildland fires that are seen on television. A 20-foot high wall of fire looks pretty terrifying to the firefighter and the homeowner though. This problem was approached from a fire on level land and on a hillside. On level land (0 to 14.9 percent grade) all structures within 30 feet of the property line are required to have non-combustible siding, soffits, or skirting on the side(s) if adjacent to an undeveloped area of natural vegetation that is in excess of five contiguous acres.

For hillsides, what slope is too much? It's known that heat rises, and flame fronts tend to become parallel to the ground as the slope increases. To help keep heat from collecting under the eves and igniting the soffits or entering the soffit venting, several slope percentages were discussed. It was decided to use the existing 15 percent slope requirements of Benton County Planning Department for critical areas.

We also required non-combustible siding and soffit material be included on the downhill side of structures within 30 feet of a 15 percent or greater slope. This determination is made by the fire marshal who can make exceptions such as pasture and orchards.

Getting fire trucks into developments can be a problem, which we mitigated by several amendments to development regulations. A single access is O.K., if each lot is greater than one acre, the access road does not exceed 600 feet, and the total number of dwelling units does not exceed 16. If any of these conditions are not met, a second entrance is required. Requiring lots to be larger than one acre helps the problem of fire extending from house to house.

Another amendment requires a second access for all residential developments with more than 50 lots. The final requirement limits the length of cul-de-sacs to 600 feet, unless approval is given.

Floods: Plan ahead to avoid disaster

CONTINUED FROM PAGE 1

The optional chapter element is designed to help communities meet multiple planning objectives, such as those required by the Flood Mitigation Assistance (FMA) Program, the Hazard Mitigation Grant Program (HMGP), Project Impact, the Flood Control Assistance Account Program (FCAAP), and the Community Rating System (CRS).

Through development and implementation of a local hazard reduction plan, communities can prepare for, and mitigate against, the impacts of future disaster events. They can plan for wise and effective use of available building areas to ensure additional homes and businesses are not placed in harms way. And, they can be prepared to apply for federal and state disaster assistance to fund other projects that reduce their risk.

To date, EMD administered mitigation programs have spent almost $30 million on the acquiring and/or elevating more than 400 flood-damaged homes around the state. This is only a portion of the effort. Other programs, such as Community Development Block Grant (CDBG) and the Department of Ecology's FCAAP, have contributed millions of dollars to mitigate against flooding problems.

Many of these homes were acquired or elevated because they were built in the wrong place at the wrong time. These tens-of-millions of dollars could have been spent on other needs critical to society, such as schools, roads, and hospitals.

We have the responsibility to ourselves, taxpayers of this nation, and our children to make every effort to develop our resources wisely and reduce the risk and impacts of future flood events.

Seattle examines new landslide provisions

By Alan Justad
Community Relations Supervisor, City of Seattle

In 1990 Seattle adopted environmental critical areas (ECA) regulations, including provisions for landslide-prone areas. Although unstable slopes had been regulated on a case-by-case basis before ECA, the regulations established a new era in approving projects in landslide-prone areas.

Geotechnical standards were incorporated into prescriptive building permit requirements, landslide-prone areas were specifically identified by ECA, and official maps were adopted that located them. Seattle's Department of Design, Construction and Land Use (DCLU) administers the regulations.

One great advantage of officially adopted definitions and requirements is designers and builders begin to expect projects on landslide-prone sites will require comprehensive topographical surveys and thorough geotechnical studies as part of the permit application package. This has helped focus application discussions on the critical issues of slope stabilization and proper drainage control.

Following the holiday storms of early 1997, DCLU staff inspected over 300 landslides on private property. Although damage to public and private property exceeded $31 million, it was clear that projects developed under the new regulations fared well, with the little damage reported confined to yards.

As a consequence of the 1997 landslides, DCLU and Seattle Public Utilities were directed to increase awareness among private property owners of the hazards and responsibilities of owning and developing landslide-prone sites. Two series of public meetings were held in the past two years for that purpose, with more than 450 people attending meetings this past winter. At the meetings, city staff and private engineers provided information on drainage control, vegetation on slopes, and landslide-prone regulations. Also discussed were the results of a recently completed landslide study by a private, geotechnical-engineering firm. The study included field confirmation and detailing of more than 1,200 known landslides in Seattle, starting from the early decades of the 20th century.

A second important regulatory tool used by city reviewers is Seattle's Stormwater, Grading, and Drainage Control Code (SGDC). The SGDC provides strong discretionary powers for regulating drainage on hillside development. This code provides enforcement tools for both new development and existing nuisance and hazardous drainage conditions, including those on hillsides.

Project balances salmon habitat restoration, flood protection

By John Engel
Supervisor, Rivers and Habitat Capital Improvement Program, Snohomish County Public Works Department

The implementation of the Drainage District 6 Salmon Habitat Restoration Project will result in reestablishing freshwater tidal conditions to 233 acres of previously farmed floodplain properties.

The project is one of the significant "early action" projects by Snohomish County and the Tri-County Salmon Recovery effort. Given the historic loss of nearly 75 percent of the wetlands in the Snohomish Estuary, this project is significant in the reversal of this trend. Located along the Ebey Slough in the Snohomish Estuary, this project was developed from recommendations in the Snohomish River Comprehensive Flood Control Management Plan adopted by the county in 1992. The plan sought to balance the flood protection in the Snohomish Valley with the need to restore critical off-channel rearing habitat for juvenile salmon.

In addition to habitat restoration, the project will provide storage for floodwater. Also designed into the project is improved public access to the Snohomish Estuary and opportunities for research and evaluation of restoration projects.

The project is being funded by many different grant sources, including salmon recovery funds recently obtained through the Governor's Salmon Recovery Office.

The major project elements are:

- Removal of approximately 2,500 feet of the existing dike.
- Reestablishment of tidal hydrology, woody debris recruitment, sedimentation, and other riverine processes to 233 acres.
- Construction of a new cross dike to isolate the tidal area from the upstream properties and two major utilities.
- Construction of a new access road from the hillside to provide construction and maintenance access.
- Reconfiguration of some existing drainage ditches into more natural tidal channels.
- Realignment of Mosher Creek through the new tidal wetland.
- Construction of a flood drainage structure through a new cross levee.
- Construction of a new tide gate on the existing ditch to continue drainage from westerly properties behind the new dike.
- Improvement of the remnant dike to standards in the Snohomish River Flood Plan.
- Reconstruction of the Puget Sound Energy electric transmission lines from wooden poles to steel poles with some permanent and temporary fill for construction access.
- Construction of two smaller dike breaches with bridges to provide public access on part of the old dike, with a small parking lot at the entrance to the old cross dike.

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